



Citizen Science and Air Quality Measurement CityTRAQ Conference

Programme

Citizen Science and Air Quality
Measurement

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Hester Volten (RIVM)
CitiObs

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Henri de Ruitter (RIVM)
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Roeland Samson (UA)
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Common challenges







CitiObs

**Enhancing Citizen Observatories for
healthy, sustainable, resilient and
inclusive cities**

Hester Volten, Stina Heikkila,
Nuria Castell, NILU, ncb@nilu.no

CitiObs Citizen Science Dialogue on Air Quality and Health



Co-funded by the
European Union

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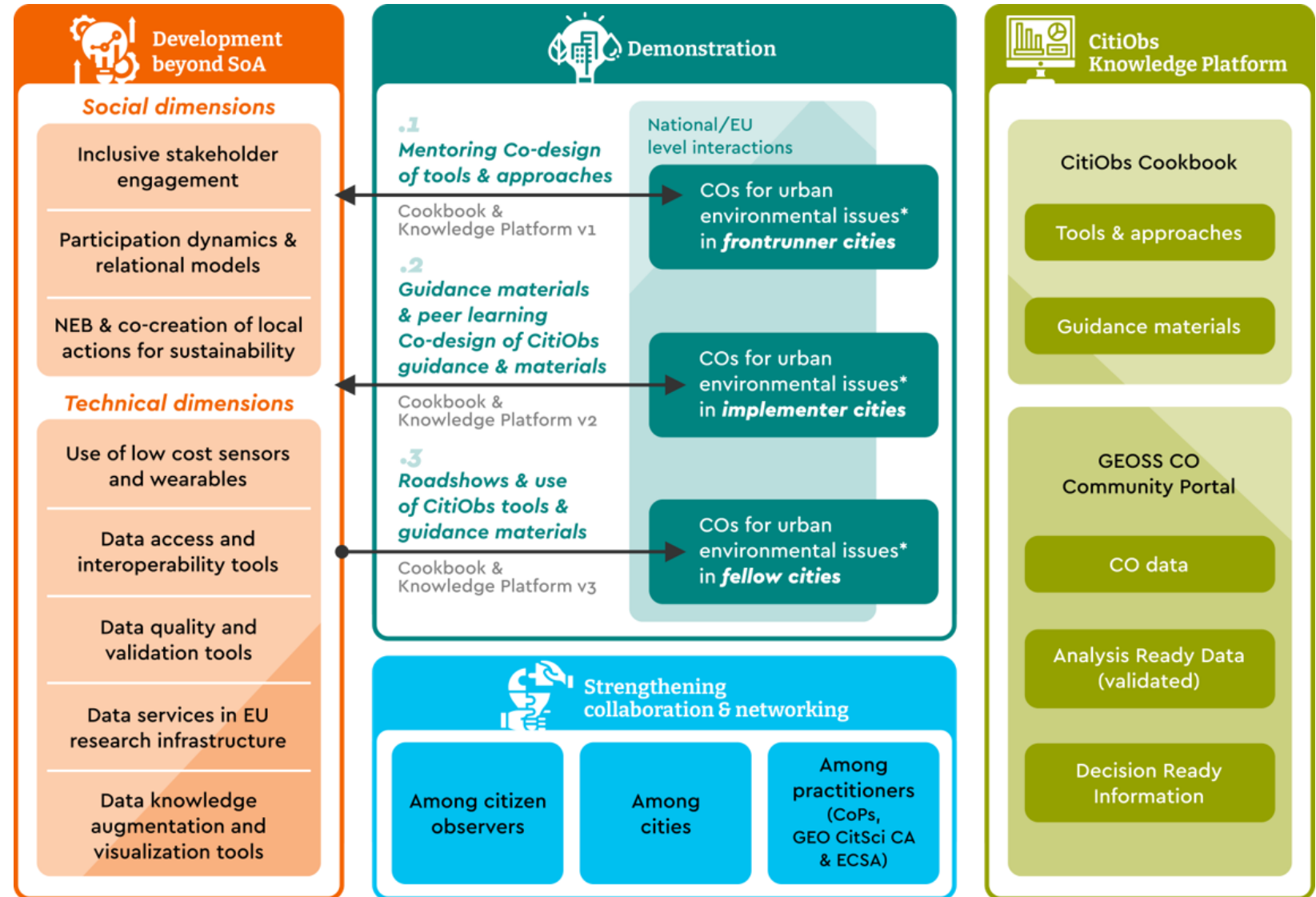


Challenge

Policy and decision makers face urban complex challenges, such as air pollution. Citizen scientists are collecting valuable data, but this data is not contributing to existing observation systems and is seldom used for policy decisions.



CitiObs Socio-Technical Methodology



* Air quality is the central theme of the COs engaged in CitiObs but other relevant thematic datasets, knowledge and local actions are also being generated





Home



Forums



Working with data



Working with your community

Creating Successful and Sustainable COs Toolkit

Leave-No-One-Behind Toolkit

Participation Dynamics Toolkit

Environmental Monitoring Toolkit

Citizen-Led Action Toolkit

Home > Working with your community

A set of practical, co-created toolkits to help you build inclusive, resilient citizen observatories – from engaging diverse communities and managing participation dynamics to enabling citizen-led action and robust environmental monitoring.



Creating Successful and Sustainable COs Toolkit

The Creating Successful and Sustainable COs Toolkit offers clear and hands-on guidance for setting up and running Citizen Observatories....



Leave-No-One-Behind Toolkit

The Leave-No-One-Behind (LNOB) Toolkit is a practical resource for Citizen Observatories aiming to improve diversity, equity, and inclusion....



Participation Dynamics Toolkit

Supports building strong, trust-based partnerships within your observatory. It provides practical tools to manage conflicts, enhance...



Environmental Monitoring Toolkit

The Environmental Monitoring Toolkit provides practical guidance for implementing low-cost, sensor-based environmental monitoring. It helps...



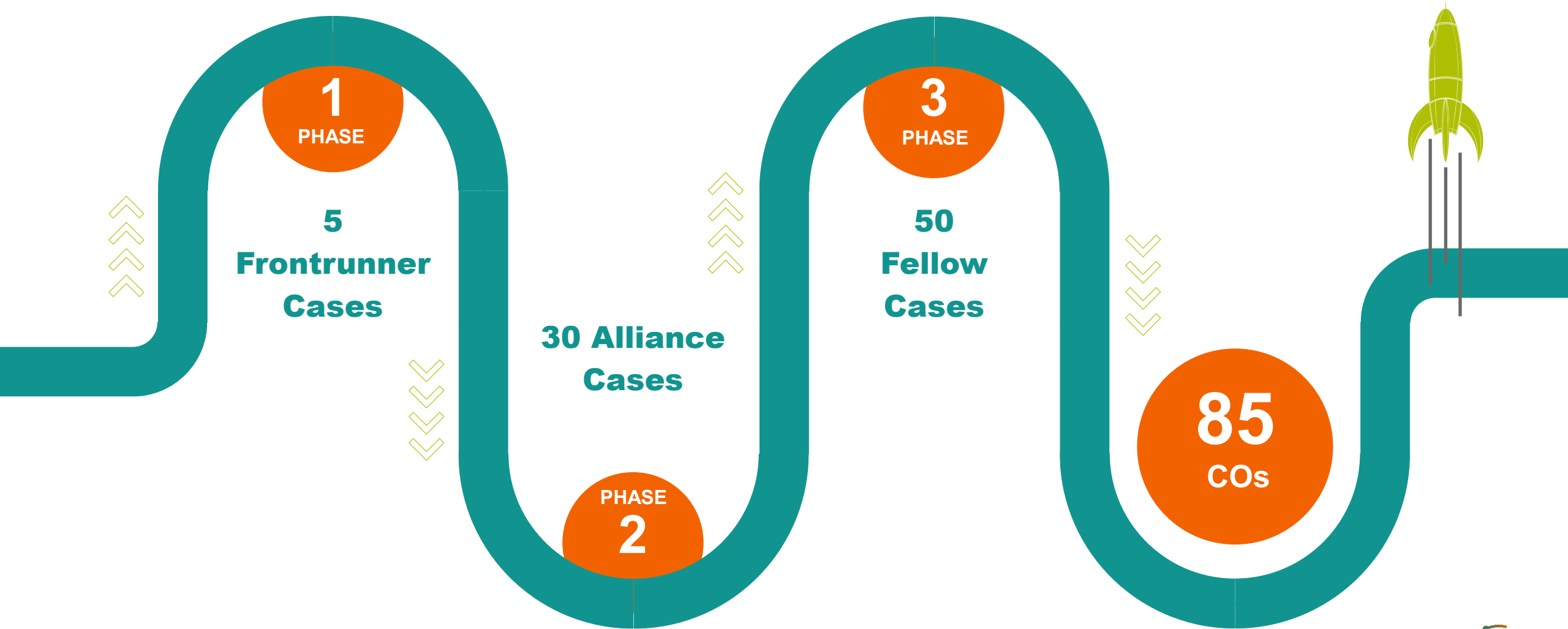
Citizen-Led Action Toolkit

The Citizen-Led Action Toolkit empowers communities to take meaningful action in environmental protection through co-creation and...

<https://citiobs.eu/citiobs-knowledge-platform>



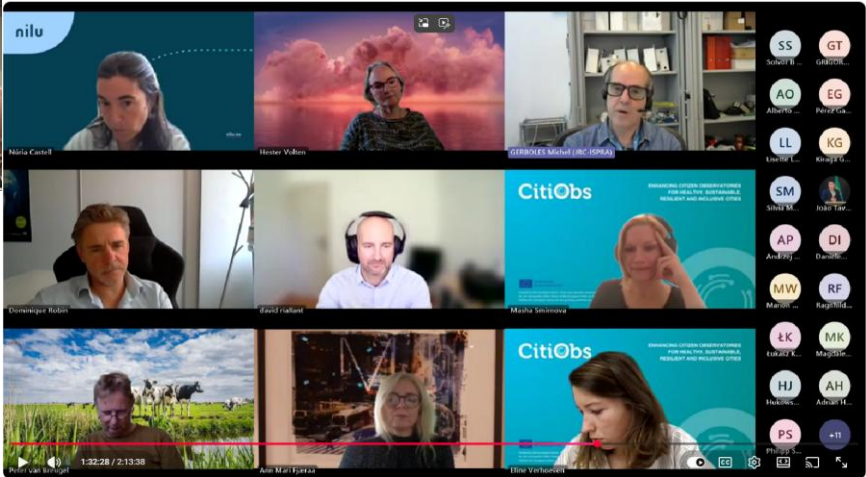
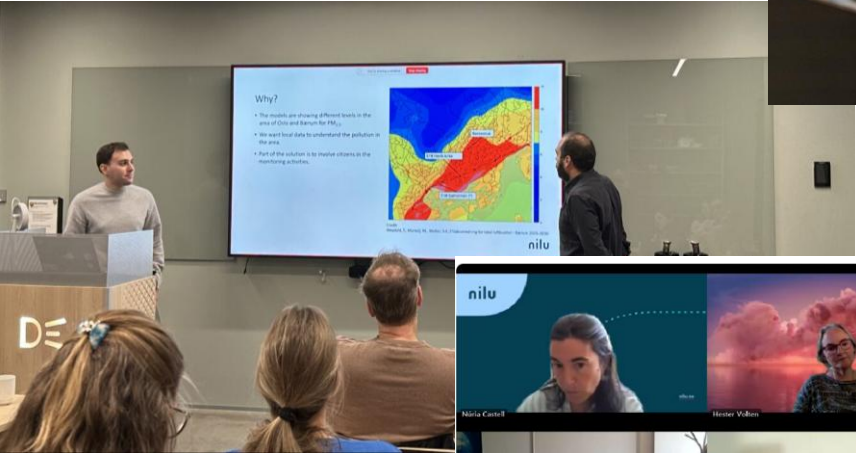
3 Phases



Citizen Observatories in Frontrunner, Alliance and Fellow Cases



Knowledge exchange and peer-learning activities



A project ends.
A community remains.

How could we support this in Rotterdam?



Sailboat exercise tool
from LNOB toolkit

We supported the transition
from project-led to independent
community

*By attending their meetings,
applying tools and connecting
them to other communities*

We facilitated a face-to-face meeting with the five Dutch Alliance Cases, the Frontrunner Case Rotterdam and CitiObs partners in Netherlands.



**Great news: the community has now
reached out to CitiObs again. Meaning
they succeeded to sustain!**



Data of dialog,
bestaat de ideale
Citizen Science
aanpak?

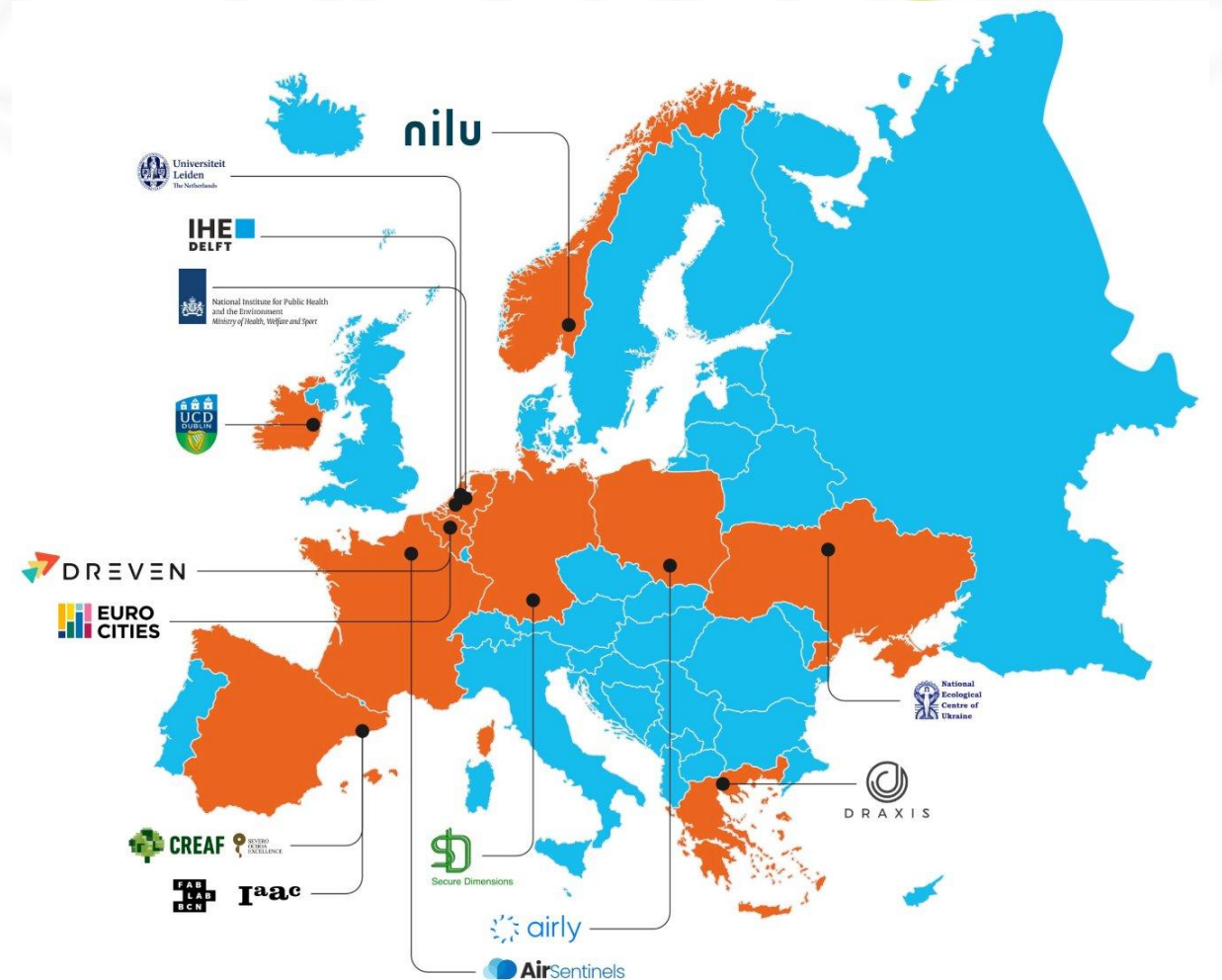
We shared lessons learned in a national citizen science magazine



CitiObs

Thank you!

Nuria Castell, ncb@nilu.no



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Rijksinstituut voor Volksgezondheid
en Milieu
*Ministerie van Volksgezondheid,
Welzijn en Sport*

RIVM – Measure Together

Henri de Ruiter and team



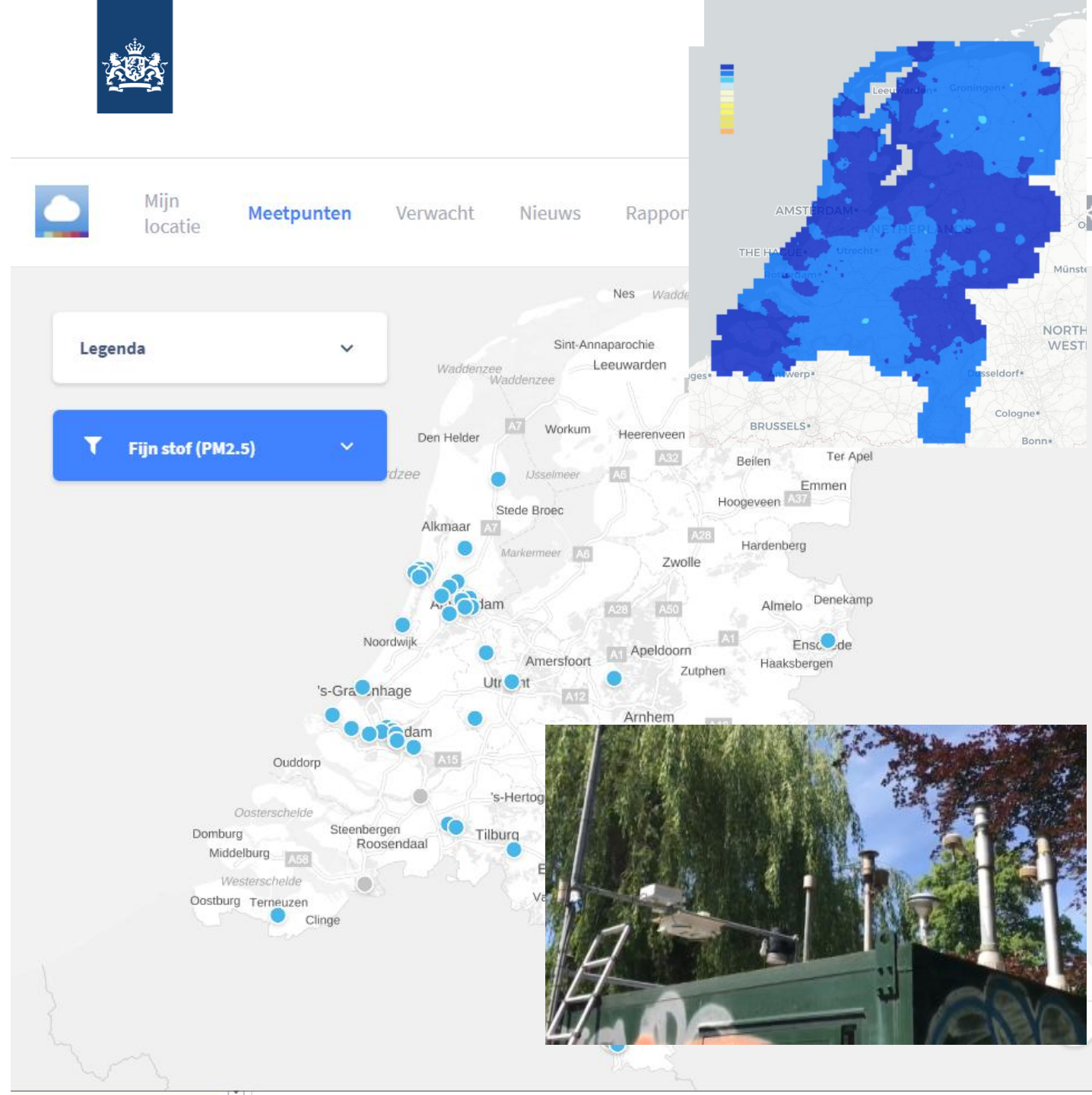


“We need a citizen science infrastructure, just like an official monitoring infrastructure.”



RIVM monitors air quality

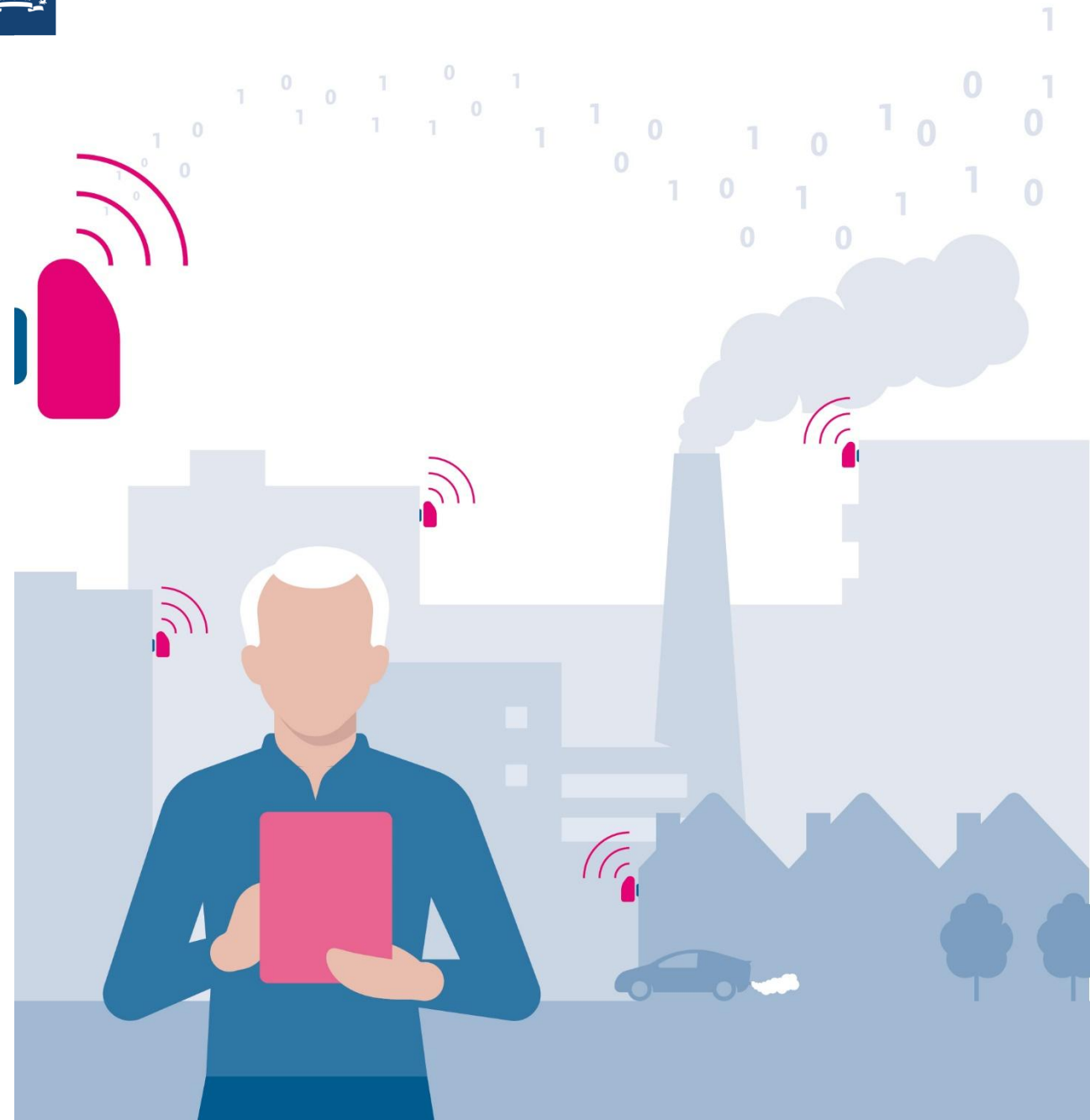
- > Reliable
- > Reference institute
- > Measurements and modelling
- > EU legislation “Air Quality Directive”





Citizens also monitor air quality

- > **Citizen sensing** often arises where official monitoring fails (e.g. wood burning)
- > CS as **opportunity** but also **challenge**
- > **Strengthening regular monitoring** with the help of citizen measurements
- > ...but also: **improving citizen measurements** through national reference data





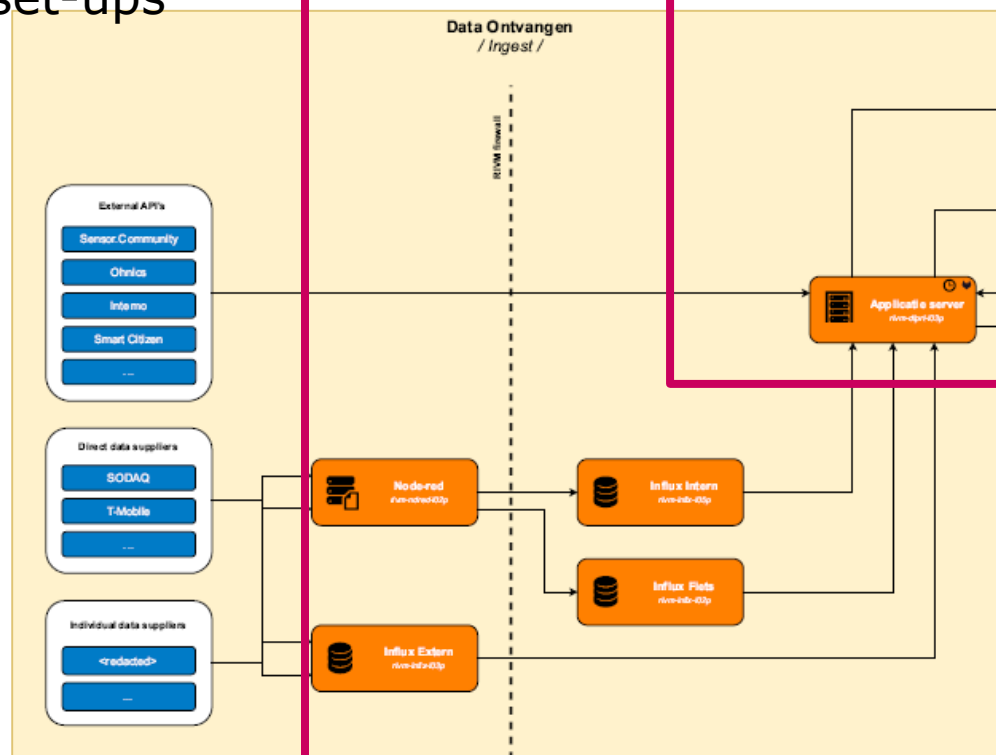
Measure Together

- ✓ Funded by the Dutch government since 2016
- ✓ **Objective:** investigate use of CS data for official monitoring
- ✓ **Unique position:** one leg in CS practices, other in institutional framework
- ✓ Move **beyond projects:** think infrastructure



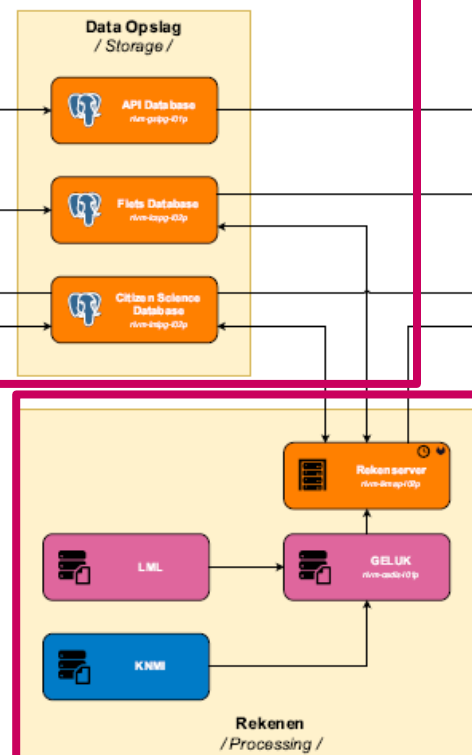
CS data

~4000 sensors
>50 projects
> 15 different
sensor set-ups



Processing & storage

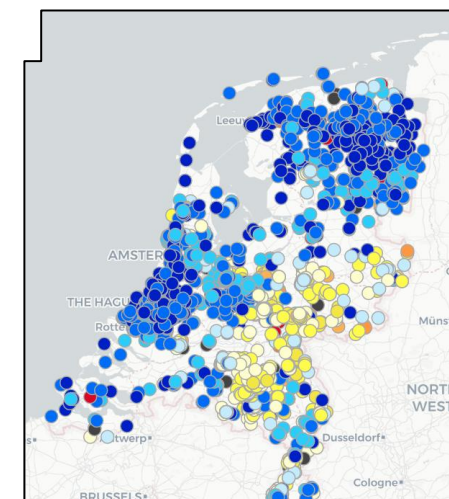
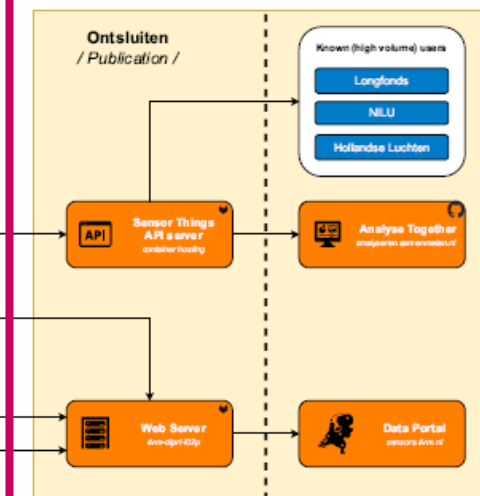
Calibration
Harmonisation



Official data

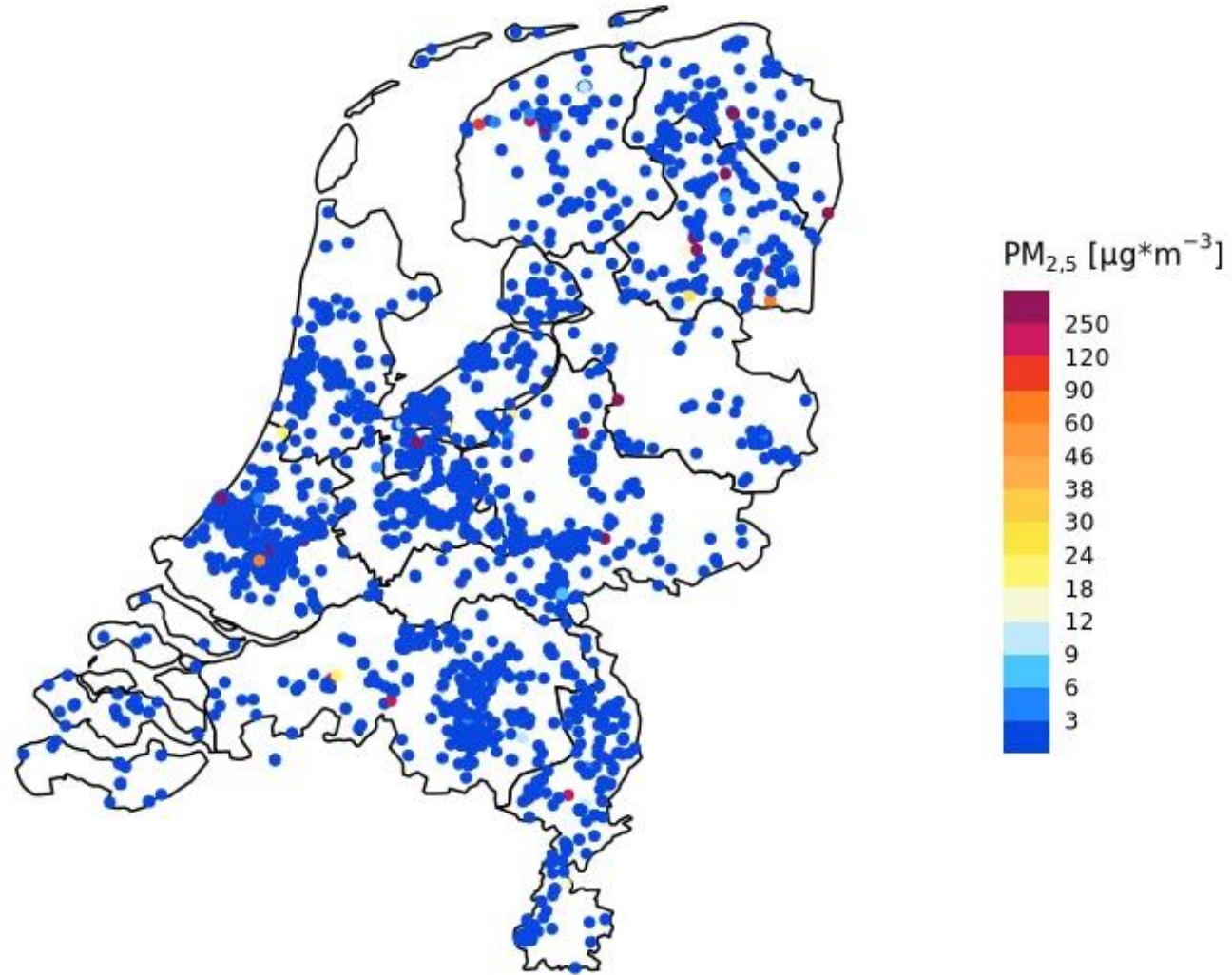
Air quality (RIVM)
Meteo data (KNMI)

External users & analysis tools (RIVM)



Fijnstof (PM_{2,5}) sensormetingen

2026-04-29 05:48:00 - 2026-04-29 06:03:00

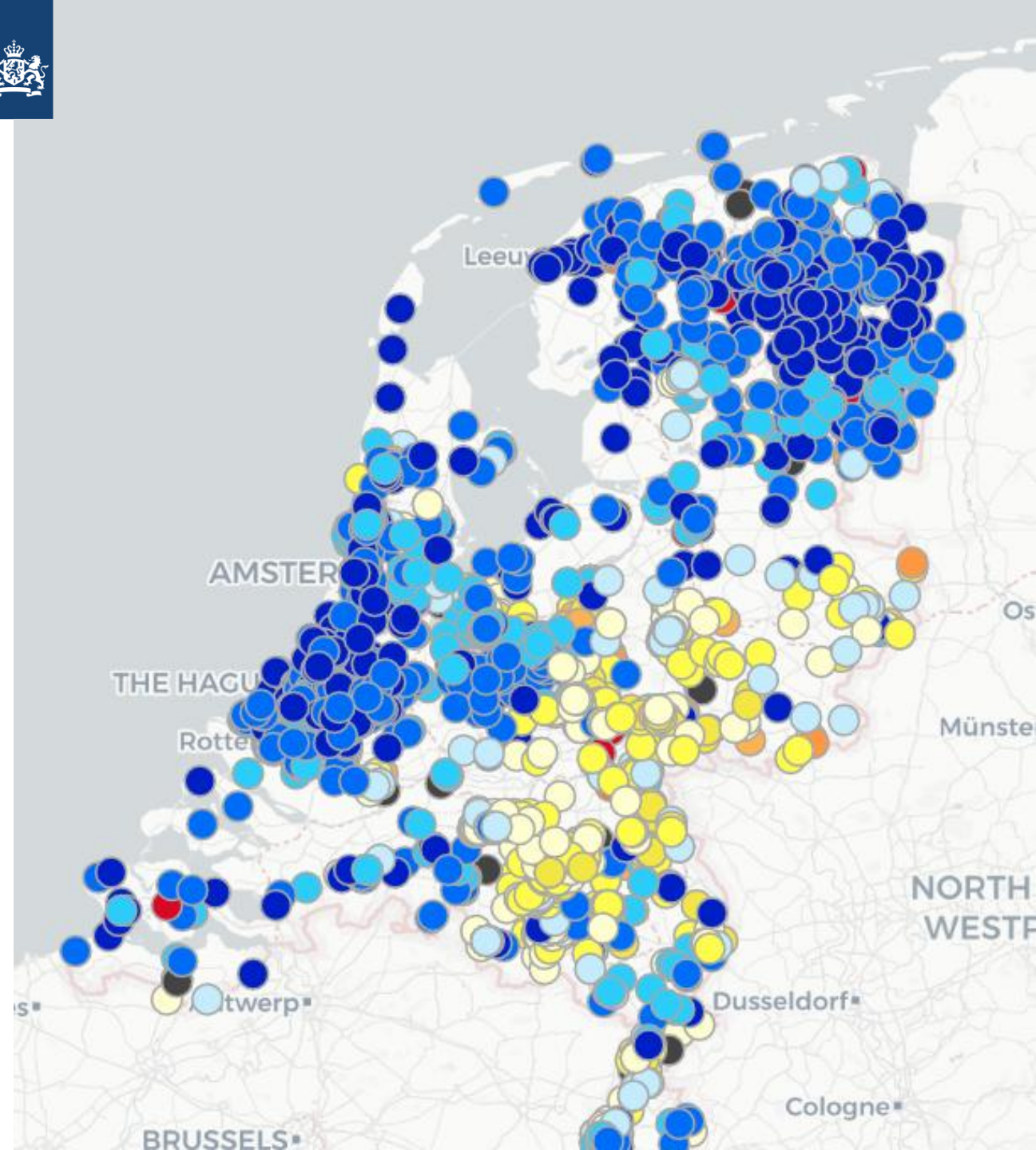






What have we learned?

- > Not just “light version” of the air measurement network
 - *from replacement to complementary*
- > Unique features (data)
 - High time resolution
 - Higher spatial resolution
- > Dialogue
 - Lived experiences
 - Context-rich





Integration & Impact Challenge

- > CS data is often “messy”
 - Lack of standards
 - Different practices
- > Action-oriented vs. long-term monitoring
- > Project (funding) vs. long-term (funding)
- > Measure Together as infrastructure may alleviate these tensions





Measure Together as *social infrastructure*

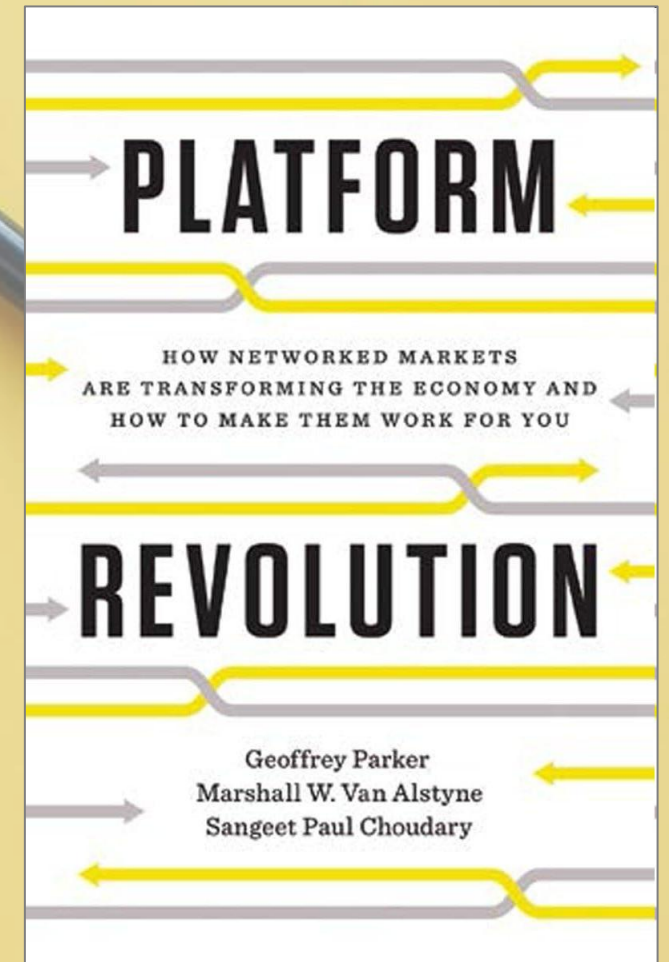
- Measure Together creates a “social space” for CS and institutions to interact – “Participation Day”
- Creates tools and processes (e.g. Analyse Together Tool)
- Allows for sense-making





Reflections from the “Integration-frontier”

- **Tiered** data quality flags
 - Enable integration of “messy” data with official data
- CS as **enhancement** of official monitoring
 - The “*Future of Monitoring*”
 - Data & dialogue
 - Official network is needed for calibration
- Infrastructure as **mediator** (e.g. Johnson, 2001)
 - Central to CS strategy, connecting people and data
 - Infrastructure is also social and offline



AIR BEZEN et. al.



Roeland SAMSON
CityTRAQ, Brussels
18/06/2026

48-uurs weersverwachting

Het weer per uur voor de komende 48 uur in Brussel (Schaarbeek)

Woensdag

Donderdag

Nu	19u	20u	21u	22u	23u	00u	1u	2u	3u	4u	5u	6u	7u	8u	9u	10u	11u	12u	13u	14u	15u	16u	17u
26° 	26° 	26° 	25° 	24° 	23° 	22° 	21° 	20° 	20° 	20° 	19° 	19° 	19° 	20° 	22° 	24° 	26° 	27° 	29° 	30° 	31° 	32° 	32° 
3 ZW	3 ZW	2 ZW	2 ZW	2 WZW	2 W	2 WNW	2 WNW	2 WNW	1 W	1 W	1 WZW	1 ZW	1 ZW	1 WZW	1 WZW	1 W	1 Z	1 ZZO	1 ZZW	2 ZZW	2 ZW	2 ZW	2 ZW

Donderdag

Vrijdag

18u	19u	20u	21u	22u	23u	00u	1u	2u	3u	4u	5u	6u	7u	8u	9u	10u	11u	12u	13u	14u	15u	16u	17u
32° 	31° 	29° 	28° 	26° 	25° 	24° 	24° 	23° 	22° 	22° 	22° 	21° 	22° 	24° 	26° 	28° 	30° 	31° 	33° 	34° 	34° 	33° 	31° 
2 ZW	2 WZW	2 NNW	2 NO	2 ONO	2 O	2 O	2 OZO	2 O	2 O	2 O	2 O	2 OZO	2 OZO	2 ZO	2 ZZO	2 Z	2 Z	2 Z	3 ZZW	3 ZZW	3 ZZW	3 ZZW	3 WZW

2014, Antwerp

Project based on a collaboration between volunteers, University of Antwerp and citizens of Antwerp

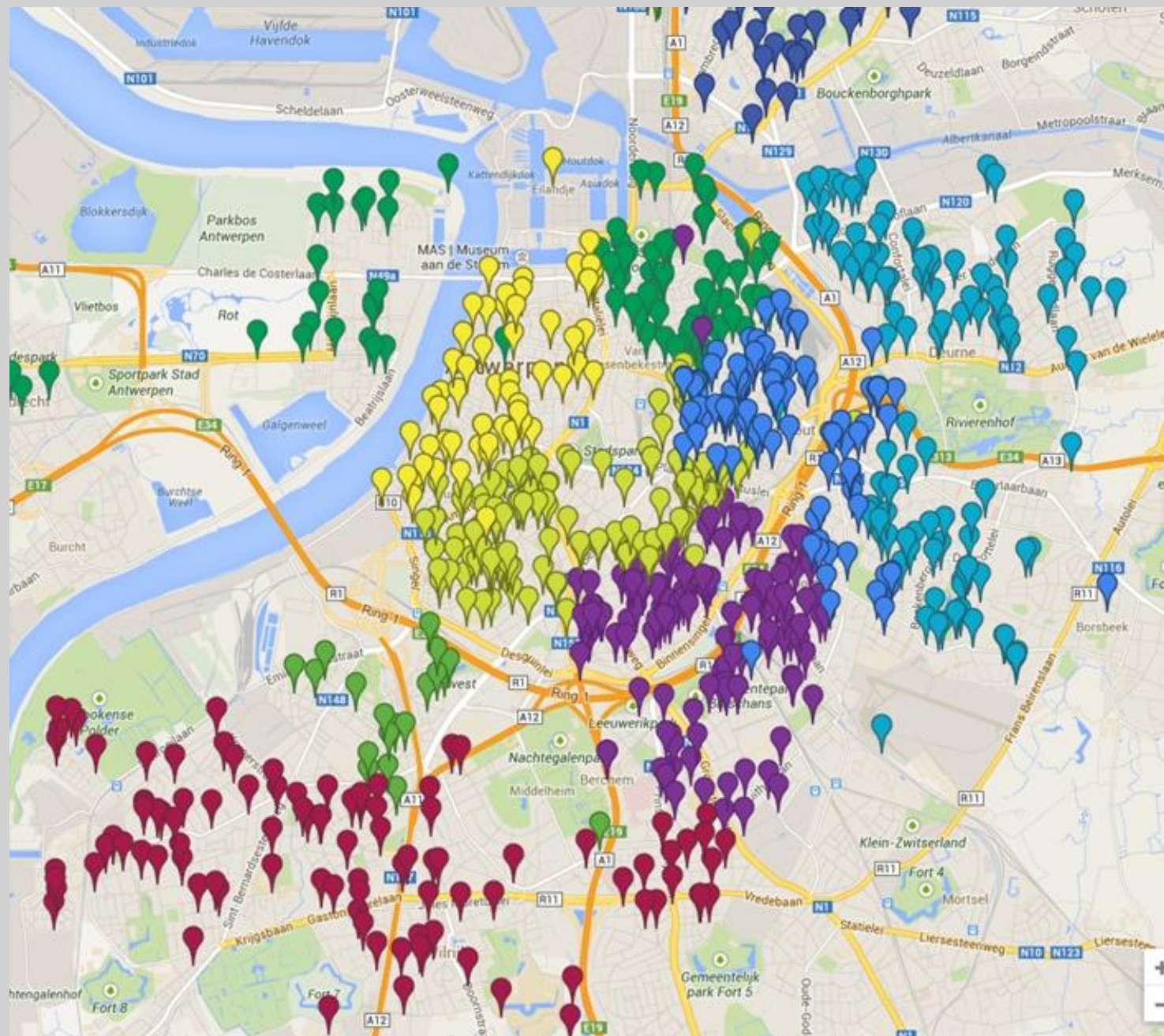
Project without specific budget

Stadslab2050

AIRbezen







About airbezen

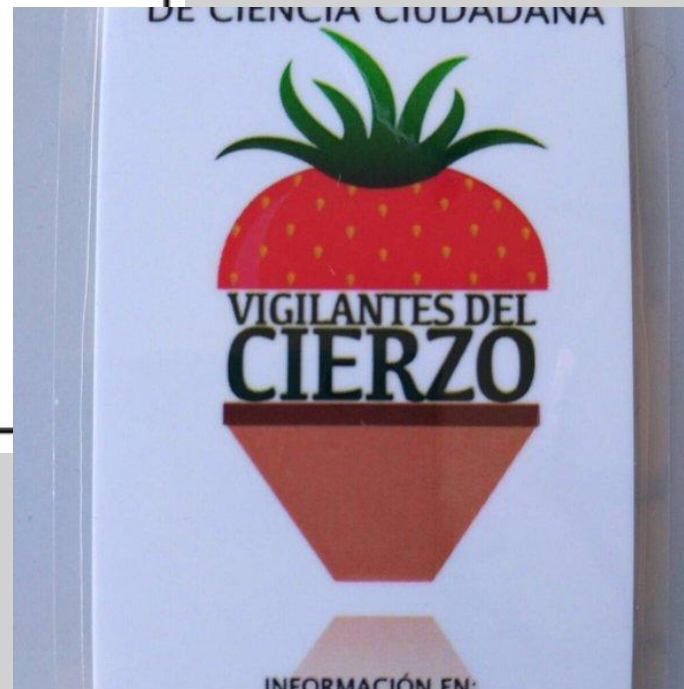
- 2014 – Antwerp
- 2015 – AIRbezen@School
- 2015 – AIRbezen Pepingen
- 2015 – AIRbezen BorgerRio (Antwerp)
- 2016 – AIRbezen Drimmelen (The Netherlands)
- 2017 – AIRbezen Zaragosa (Spain)
- 2017 – AIRbezen Oost-Vlaanderen
- 2019 – AIRbezen@School
- 2019 – AIRbezen Europe: strawbAIRies





ANTWERPSE
AIRBEES

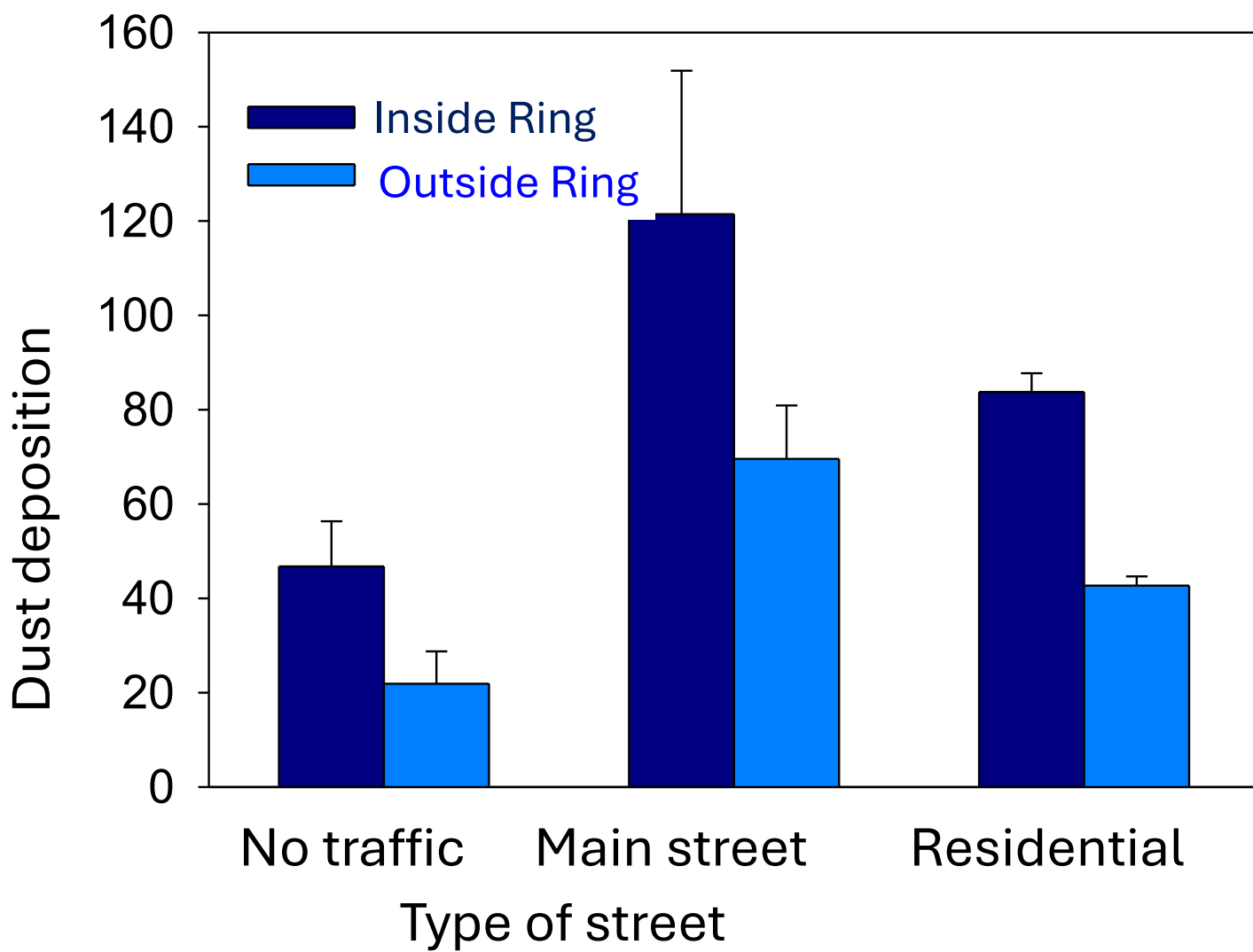
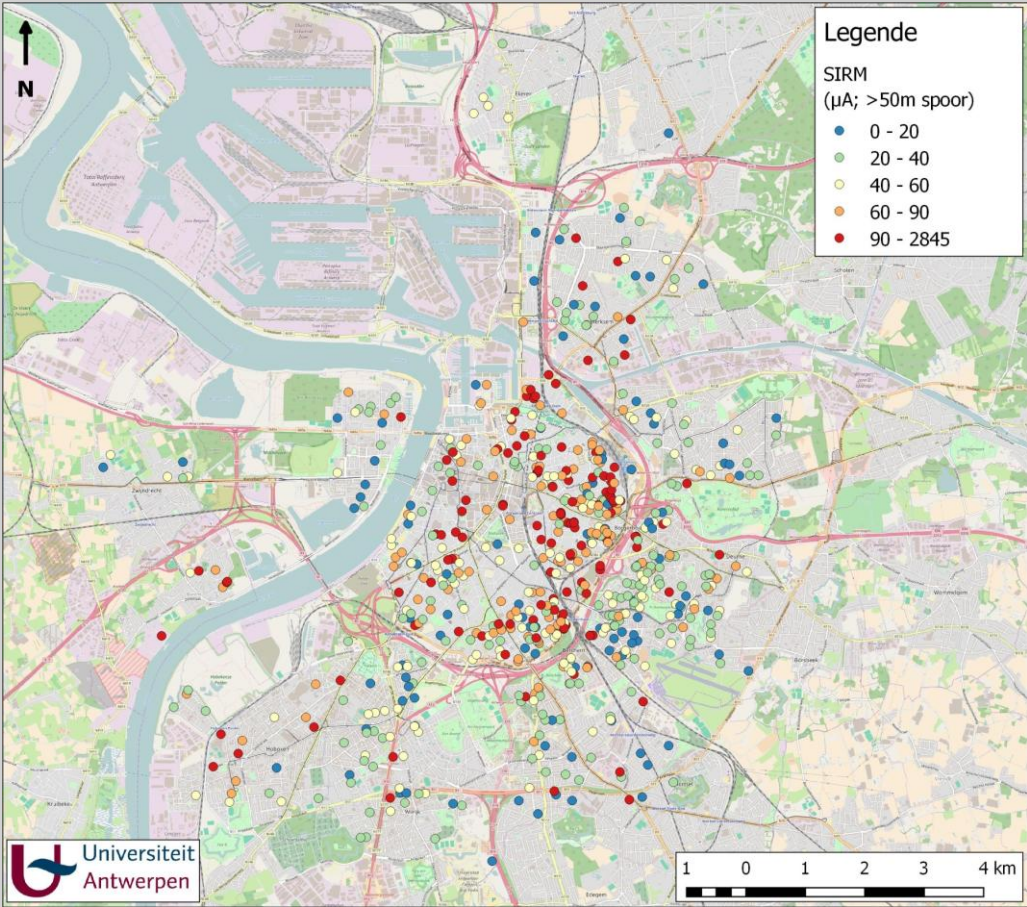
(The Antwerp strawberry)



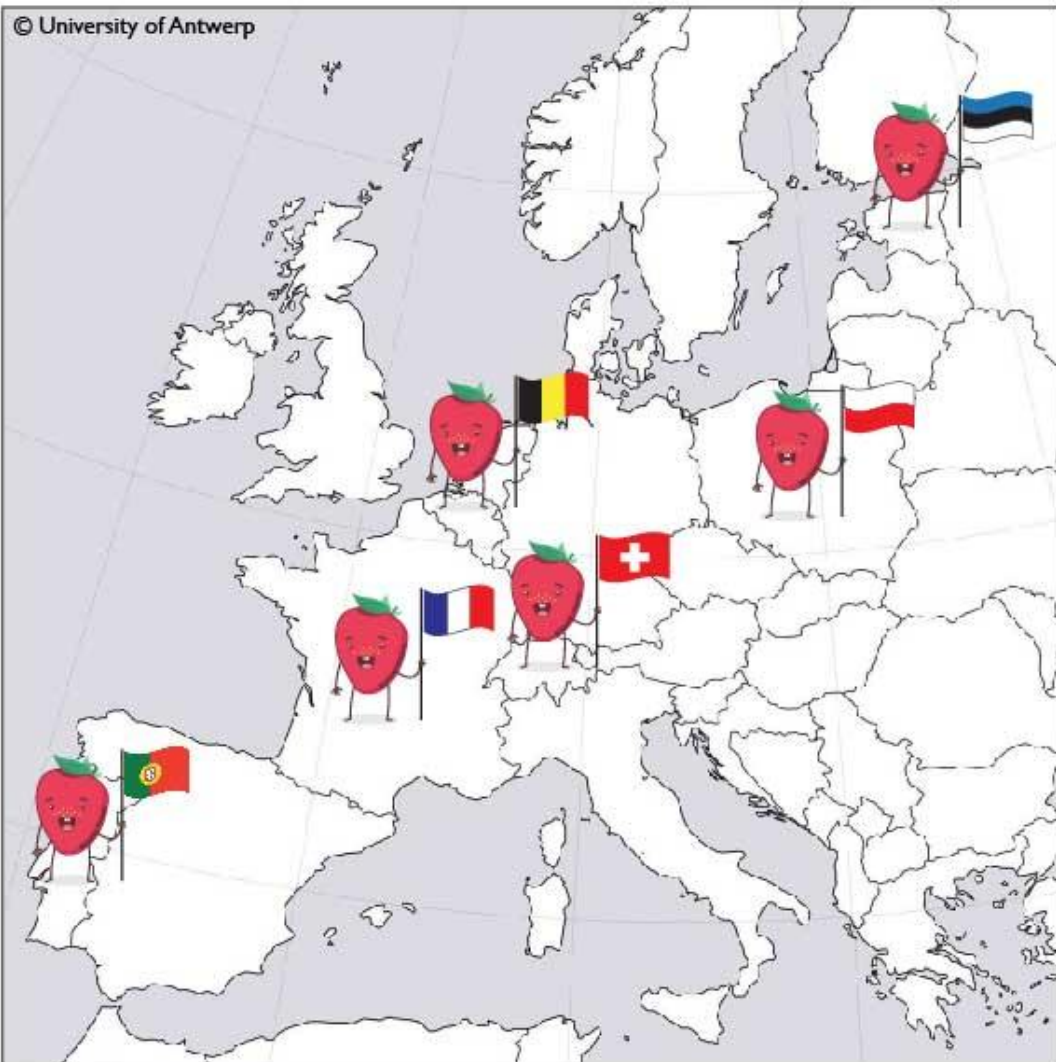








© University of Antwerp



STRAW BAIRIES EUROPE

AIR QUALITY AND
POLLINATION SUCCES OF PLANTS
IN EUROPEAN CITIES

www.strawbAIRies.com

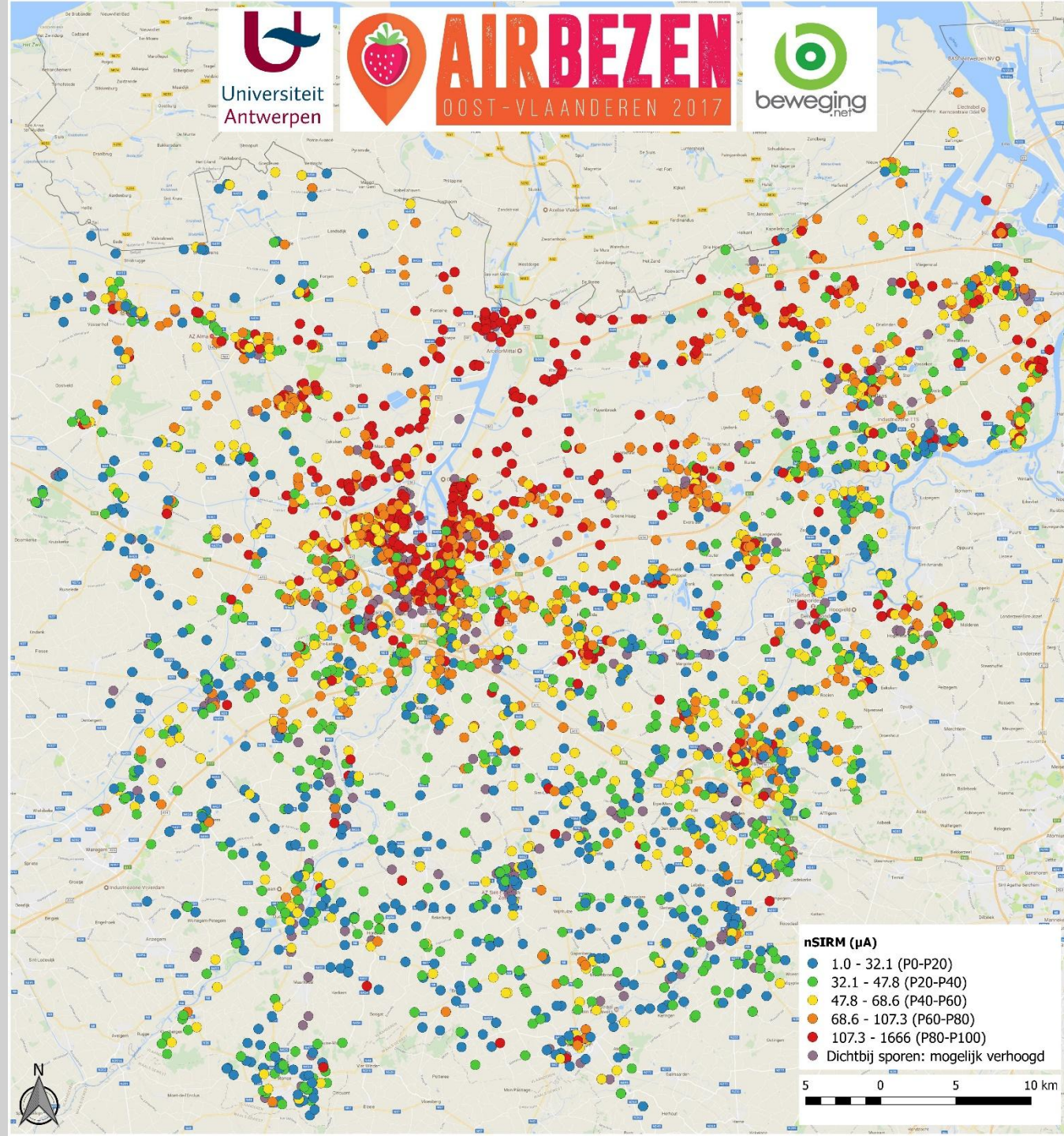
AIR BEZEN EUROPA

LUCHTKWALITEIT EN
BESTUIVINGSSUCCES VAN PLANTEN
IN EUROPESE STEDEN

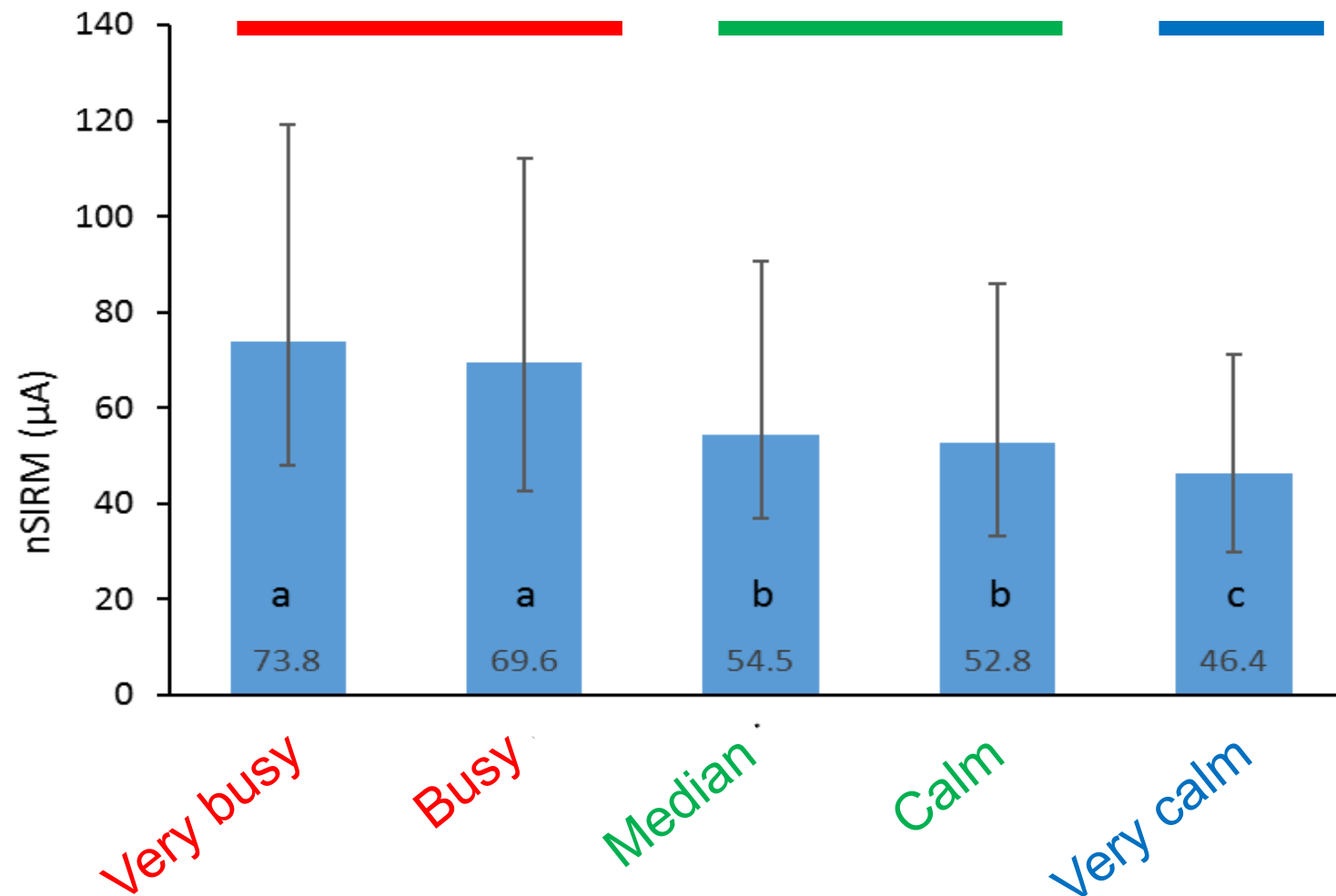
 Universiteit
Antwerpen [alle info op uantwerpen.be/strawbAIRies](http://uantwerpen.be/strawbAIRies)

AIRbezen East-Flanders

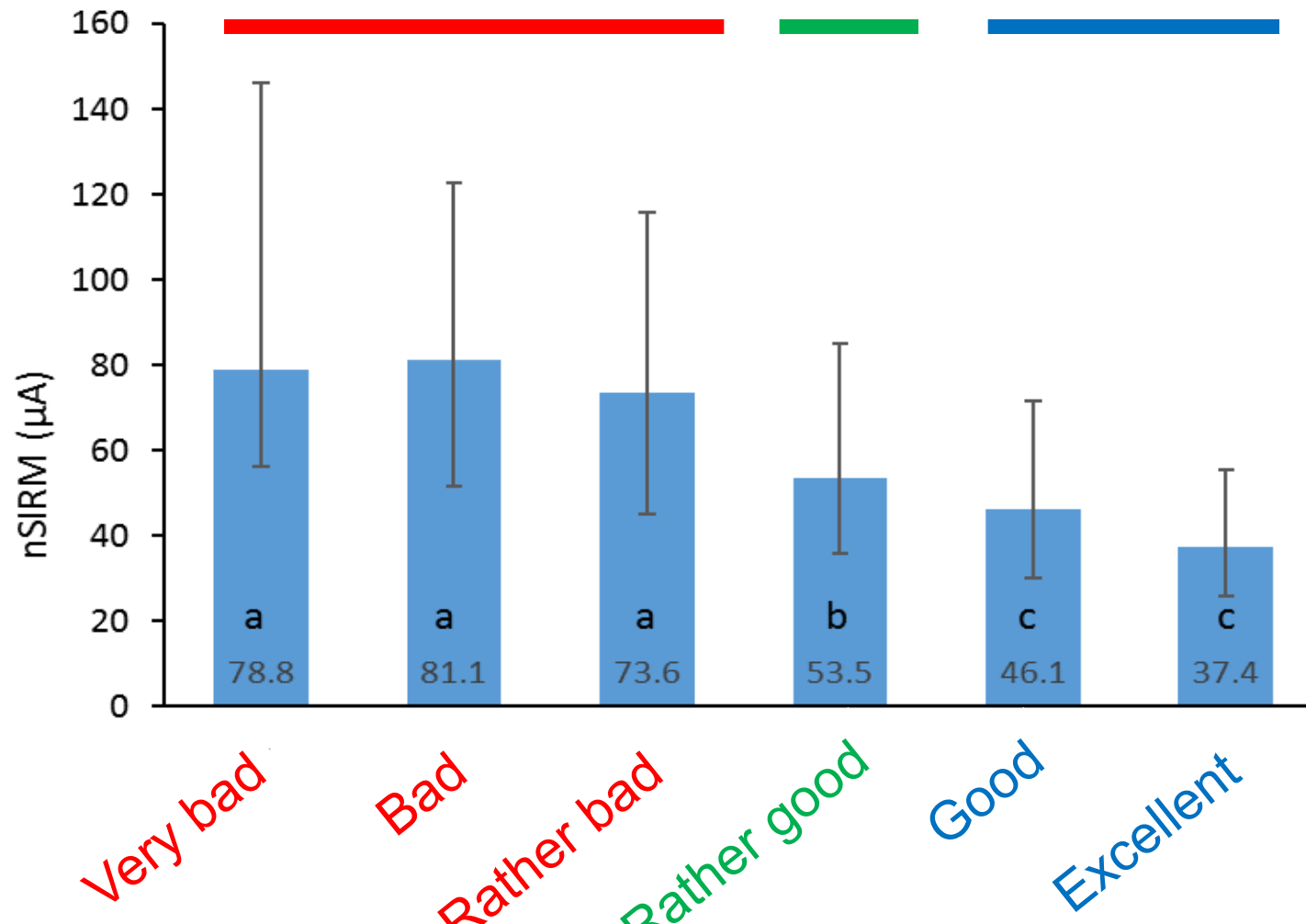




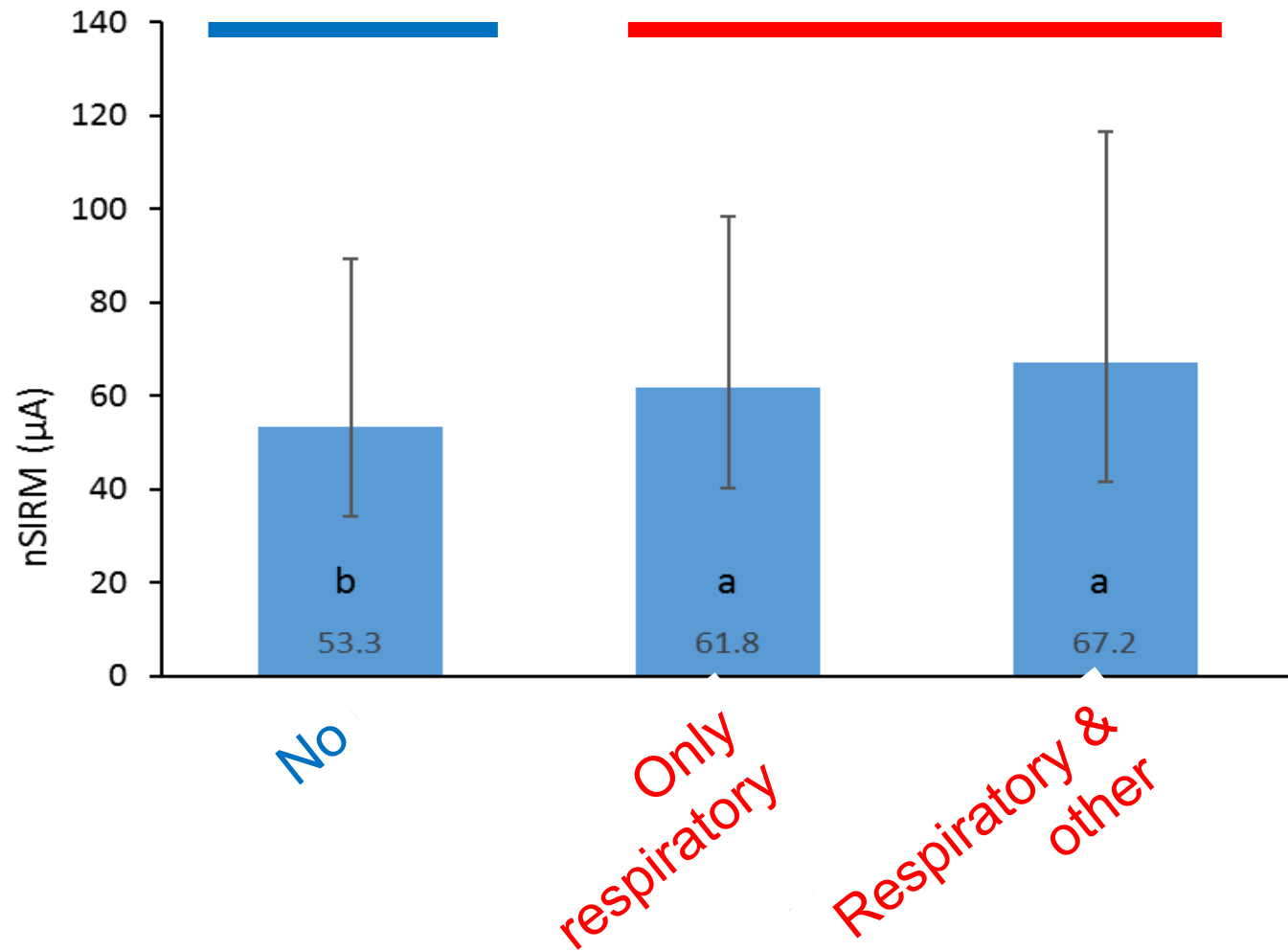
Analyses: Estimated traffic intensity (n > 6500)



Analyses: Estimated air quality (n > 6500)



Analyses: health (n > 6500)



WELKOM



CLAIRE

18 JANUARI 2021



WELKOM



CLAIRE

18 JANUARI 2021



Claire kondigt trots
de geboorte aan
van haar broertje



GILBAIR

12 februari 2021

Kraambezoek & wandelingen via uantwerpen.be/claire



@claire_cleanair



Claire kondigt trots
de geboorte aan
van haar broertje



GILBAIR

12 februari 2021

Kraambezoek & wandelingen via uantwerpen.be/claire



@claire_cleanair



CLAIRE

397
Vrijwilligers



Wat Hebben Ze Gedaan?



4
Routes



568
Wandelingen



35
Wandelweken



3.680,5
Kilometer

2 Meetpoppen



Claire
318 wandelingen
2.305,50 km



Gilbair
250 wandelingen
1.375 km

En Wat Verder Nog?

2
Buggy's



om de toestellen
in te dragen

2x 4
Toestellen
om de
luchtkwaliteit te
meten



4
Seizoenen

Met medewerking en dank aan:

Interreg
2 Seas Mers Zeeën

NATURE SMART CITIES
ACROSS THE 2 SEAS

Universiteit
Antwerpen





Plataancheck

[Home](#)

[Inleverpunten](#)

Plataan als natuurlijk logboek voor luchtvervuiling

Plataancheck meetcampagne 2026

Met de plataancheck kan je fijnstofuitstoot in je omgeving meten. We

Scivil Citizen Science
Vlaanderen



Koninklijk Meteorologisch Instituut
Institut Royale Météorologique

UCLouvain



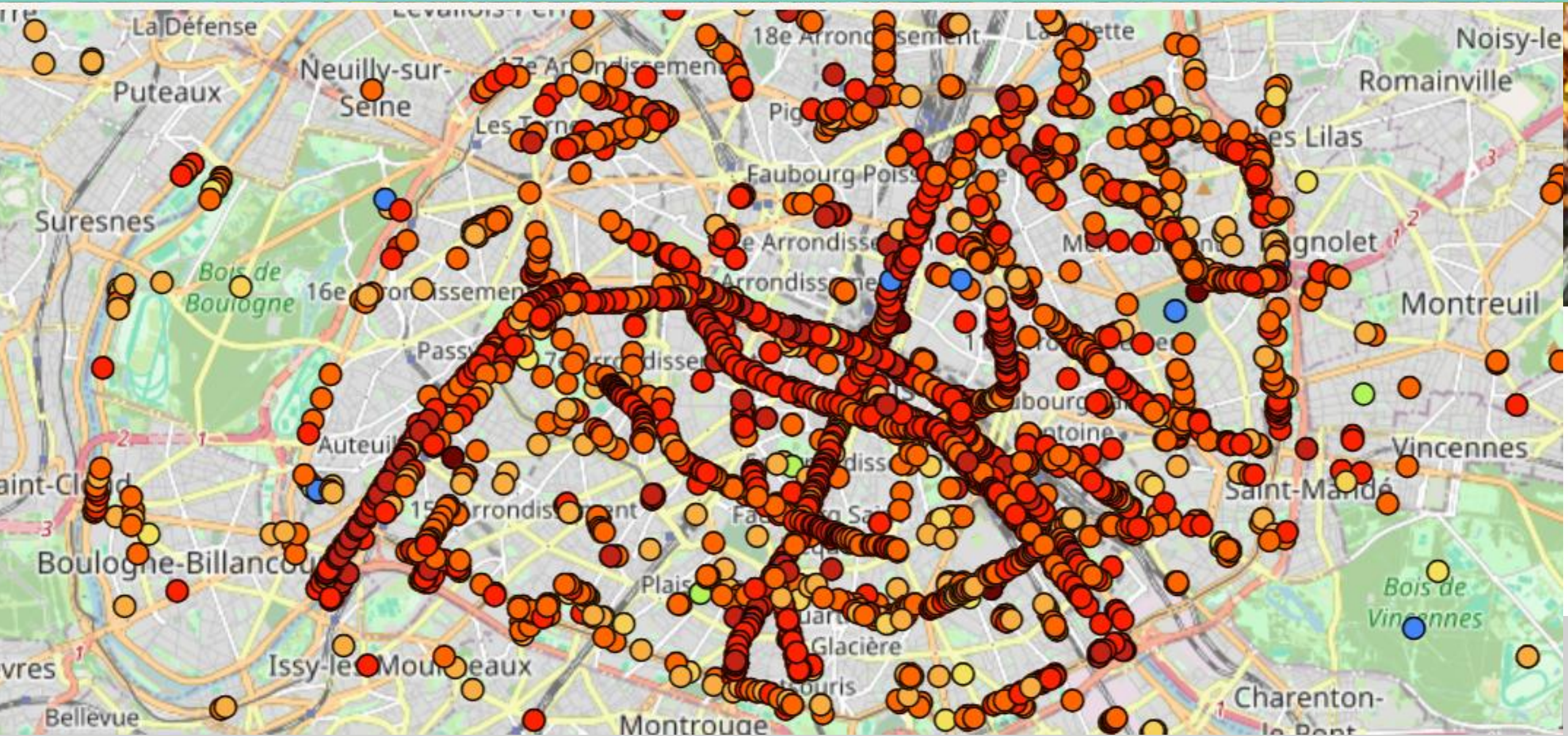
Universiteit
Antwerpen

Partners

ECORC'AIR



**plataan
check.nl**



- Easy
- Win-win + emotion
- Communication
- Citizens can realise unique sampling campaigns
- Enormous awareness rising
- Enormous impact on society and policy-makers
- Citizens can provide meaningful data
- Subjective data seems to be meaningful



roeland.samson@uantwerpen.be



Common challenges

1. What does our challenge entail? Who is affected by what and how?
2. What are possible solutions or mitigation strategies we can come up with?
3. Done? Go back to 1. and define a new challenge 😊